

## **Sediment Transport in the Yankee Fork of the Salmon River, Central Idaho**

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The Yankee Fork of the Salmon River originates in the Salmon River Mountains of central Idaho and flows south to its confluence with the Salmon River about 20 miles east of Stanley. In an effort to rejuvenate spawning habitat for spring and summer Chinook Salmon and steelhead, the Bureau of Reclamation and the Shoshone-Bannock Tribes implemented a series of habitat improvement projects in the mainstem of the Yankee Fork and in selected tributaries. In 2012, the Shoshone-Bannock Tribes funded the U.S. Geological Survey to measure streamflow and to collect suspended sediment samples in the lower Yankee Fork to determine the quantity, timing, and spatial variability of sediment transport. From April 2012 through July 2014, streamflow and suspended sediment samples were collected at three sites: the Yankee Fork at Bonanza; the Yankee Fork downstream of the confluence of the West Fork Yankee Fork; and the Yankee Fork near Clayton.

During the 28 months of the study, an estimated 24,000 tons of suspended sediment were transported from the Yankee Fork to the Salmon River. About 54 percent of the total suspended sediment transported was fine-grained sediment (less than 63 micron). Except during high streamflow (more than about 1,700 cubic feet per second), fine-grained sediment constituted the majority of the daily suspended sediment loads. About 98 percent of the total suspended sediment was transported during April, May, and June; about 62 percent was transported during May alone. Suspended sediment loads were generally larger on the ascending limb of the streamflow hydrograph as compared to the descending limb. This finding, known as hysteresis, was more pronounced for fine-grained sediment compared to the sand-sized sediment. About 40 percent of the fine-grained sediment was from the West Fork of the Yankee Fork, most likely the result of the 2012 fires in that watershed. Although bedload sediment was not sampled during the study, it may contribute a large amount of sand-sized sediment to the Salmon River from the Yankee Fork in the spring during high streamflow. Results of this study will help guide future habitat improvement projects undertaken by the Bureau of Reclamation and the Shoshone-Bannock Tribes in the mainstem of the Yankee Fork and in selected tributaries.